Spaceward Bound Pavilion Lake 2008

Goal: To help local students and teachers learn about analogue science and exploration through a relevant field-based educational activity.

Activity Date: June 27, 2008

Activity Overview:

- 20 teachers/Band councilors and students (min age of 13) from the Pavilion Lake region will be guided by Dr. Chris McKay (NASA Ames Research Center) through a 1-day field course at Pavilion Lake. The day will include snorkeling in Pavilion Lake with Dr. McKay, to look at shallow water microbialite fields. A diver will provide underwater support to the snorkeling group.
- The group will also dissect a microbialite and examine it under a microscope to observe microscopic communities living on the structures. Students and teachers will use scientifically rigorous techniques to deal with the microbialite.
- The activity will run from approximately 10am-3pm. Lunch will be provided.

Teacher/Band Counsilor and student information:

- While swimming proficiency is highly recommended, it is not required. Those students who are not comfortable in water are also welcome to participate.
- Snorkels, masks, and life jackets will be provided
- Recommended items to bring:
    - Towels
    - Sunscreen
    - Sunglasses
    - Swim suits
    - Change of clothes
    - Pencil and paper
    - Camera

Contacts:

Larry Ormandy, Ts'kw'aylaxw First Nations,
Mickey Macri, Pavilion Lake Community
Patricia Montgomery, NASA Ames Research Center

Background on the Pavilion Lake Research Project (PLRP):

The PLRP is a NASA-UBC led multi-disciplinary initiative (see www.pavilionlake.com for more information). Project members have been conducting science and exploration activities in the Pavilion Lake region since 2004. The overarching goal of this research is to develop an understanding of the mechanisms of formation of the unique microbialites in the lake and the

potential for associated biosignatures. This understanding will contribute to astrobiology research by providing the basis for interpretation of similar organo-sedimentary structures either on early earth (e.g. stromatolites) or potentially on other planets. The following is a list of the on-going PLRP science objectives:

1. General Limnology of Pavilion Lake and surrounding water bodies
    - Chemical and Physical characteristics
    - Stable Isotopic (C, O, H) characterization; carbon-sources; groundwater-provenance
    - Water budget and balance
2. Microbial influence on carbonate formation
    - Isotopic tracers of inorganic and organic carbon sources
    - Microscopy and molecular characterization
3. Microbialite mapping
    - Lateral and Vertical variability
    - Correlation with environmental factors (e.g. groundwater inputs, light)
4. Contextual comparison to other microbialite/carbonate rich lakes.
5. Determine the spectral (visible to thermal infrared) and erosional properties of the carbonates.

Pavilion Lake microbialites

Biography of Dr. Christopher McKay

Dr. Christopher P. McKay, Planetary Scientist with the Space Science Division of NASA Ames. Chris received his Ph.D. in AstroGeophysics from the University of Colorado in 1982 and has been a research scientist with the NASA Ames Research Center since that time. His current research focuses on the evolution of the solar system and the origin of life. He is also actively involved in planning for future Mars missions including human exploration. Chris been involved in research in Mars-like environments on Earth, traveling to the Antarctic dry valleys, Siberia, the Canadian Arctic, and the Atacama desert to study life in these Mars-like environments. His was a co-I on the Titan Huygen's probe in 2005, the Mars Phoenix Lander mission that just launched, and the Mars Science Lander mission slated for launch in 2009.